

IN THE CLAIMS:

The text of all pending claims, (including withdrawn claims) is set forth below. Cancelled and not entered claims are indicated with claim number and status only. The claims as listed below show added text with underlining and deleted text with ~~striketrough~~. The status of each claim is indicated with one of (original), (currently amended), (cancelled), (withdrawn), (new), (previously presented), or (not entered).

No amendments to the claims are set forth herein, though the pending claims have been repeated below for the convenience of the Examiner.

1. (PREVIOUSLY PRESENTED) A semiconductor device loading apparatus for test handlers, comprising:

a body including a plurality of pickup cylinders provided with a plurality of vacuum adsorbers to vacuum-suck and to transfer semiconductor devices to be tested, a space adjusting plate to adjust pitches of the vacuum adsorbers, and an elevation guiding unit to guide one of lifting and lowering of the space adjusting plate, wherein said space adjusting plate is provided with a plurality of differently slanted guides formed to individually adjust the pitches of the vacuum adsorbers, with said vacuum adsorbers each interacting with a respective one of the differently slanted guides; and

a guide block fixing plate, separate from the body, to guide the semiconductor devices to be accurately positioned in pockets of a test tray, respectively.

2. (PREVIOUSLY PRESENTED) A semiconductor device loading apparatus for test handlers, comprising:

a body including a plurality of pickup cylinders provided with a plurality of vacuum adsorbers to vacuum-suck and to transfer semiconductor devices to be tested, a space adjusting plate to adjust pitches of the vacuum adsorbers, and an elevation guiding unit to guide one of lifting and lowering of the space adjusting plate; and

a guide block fixing plate, separate from the body, to guide the semiconductor devices to be accurately positioned in pockets of a test tray, respectively,

wherein said space adjusting plate is provided with a plurality of guide slots formed to allow spaces therebetween to be downwardly narrowed so as to adjust the pitches of the vacuum adsorbers, and said vacuum adsorbers are each provided with a guide projection adapted to

insert to a respective one of the guide slots.

3. (PREVIOUSLY PRESENTED) A semiconductor device loading apparatus for test handlers, comprising:

a body including a plurality of pickup cylinders provided with a plurality of vacuum adsorbers to vacuum-suck and to transfer semiconductor devices to be tested, a space adjusting plate to adjust pitches of the vacuum adsorbers, and an elevation guiding unit to guide one of lifting and lowering of the space adjusting plate; and

a guide block fixing plate, separate from the body, to guide the semiconductor devices to be accurately positioned in pockets of a test tray, respectively,

wherein said guide block fixing plate is positioned to be downwardly spaced apart from the vacuum adsorbers and upwardly spaced apart from the test tray, and is provided with guide blocks of a number equal to a number of the pockets of the test tray.

4. (PREVIOUSLY PRESENTED) The semiconductor device loading apparatus according to claim 3, wherein said guide blocks are each provided with an opening sized to be equal to a size of each of the semiconductor devices, and with a pair of guide pins downwardly extending from front and rear edges thereof.

5. (PREVIOUSLY PRESENTED) The semiconductor device loading apparatus according to claim 4, wherein:

each of the pockets includes a pair of pin holes formed in front and rear edges thereof; and

each of said guide pins have a diameter smaller than a diameter of a respective one of the pin holes, and said guide pins are spaced apart from each other by a space equal to a space between the pair of pin holes.

6. (PREVIOUSLY PRESENTED) The semiconductor device loading apparatus according to claim 4, wherein each said opening comprises an entrance portion formed on an upper surface of the guide block and sized to be slightly larger than a size of a respective semiconductor device to receive the respective semiconductor device, an exit portion formed on a lower surface of the guide block and sized to be substantially equal to the size of the respective semiconductor device to allow the respective semiconductor device to pass therethrough, and a guide portion formed

between the entrance and exit portions and tapered from the entrance portion to the exit portion.

7. (PREVIOUSLY PRESENTED) A semiconductor device loading apparatus, comprising:
a plurality of device loading units to load semiconductor devices;
a space adjusting unit provided with a plurality of differently slanted guides formed to individually adjust pitches of the device loading units; and
an elevation control unit coupled to the space adjusting unit and controlling an elevation of the space adjusting unit to change a spacing between respective adjacent device loading units in accordance with the elevation of the space adjusting unit by causing the respective adjacent device loading units to interact with a respective one of the differently slanted guides.

8. (PREVIOUSLY PRESENTED) The semiconductor device loading apparatus according to claim 7, further comprising:

a guide block fixing unit provided adjacent to the plurality of device loading units to guide the semiconductor devices therethrough to pockets of a test tray, respectively.

9. (PREVIOUSLY PRESENTED) The semiconductor device loading apparatus according to claim 7, wherein said space adjusting unit comprises:

a plurality of space changing units, including the plurality of differently slanted guides, corresponding to the plurality of device loading units to change each respective spacing between adjacent device loading units.

10. (PREVIOUSLY PRESENTED) The semiconductor device loading apparatus according to claim 7, wherein each respective spacing between adjacent device loading units is narrowed, when the elevation of the space adjusting unit is increased.

11. (PREVIOUSLY PRESENTED) The semiconductor device loading apparatus according to claim 7, wherein each respective spacing between adjacent device loading units is widened, when the elevation of the space adjusting unit is decreased.

12. (PREVIOUSLY PRESENTED) The semiconductor device loading apparatus according to claim 9, wherein each space changing unit comprises:

a guide slot formed on the space adjusting unit, being one of the plurality of differently slanted guides; and

a guide projection formed on a respective one of the device loading units to insert into the guide slot corresponding to a respective one of the device loading units to cause the interaction with the respective one of the differently slanted guides.

13. (PREVIOUSLY PRESENTED) The semiconductor device loading apparatus according to claim 8, wherein the guide block fixing unit is remote from the device loading units and the test tray, and is provided with guide blocks of a number equal to a number of the pockets of the test tray.

14. (PREVIOUSLY PRESENTED) A semiconductor device loading apparatus, comprising:
a plurality of device loading units to load semiconductor devices;
a space adjusting unit;

an elevation control unit coupled to the space adjusting unit and controlling an elevation of the space adjusting unit to change a spacing between respective adjacent device loading units in accordance with the elevation of the space adjusting unit; and

a guide block fixing unit provided adjacent to the plurality of device loading units to guide the semiconductor devices therethrough to pockets of a test tray, respectively,

wherein the guide block fixing unit is remote from the device loading units and the test tray, and is provided with guide blocks of a number equal to a number of the pockets of the test tray, and

wherein each of the guide blocks is provided with an opening formed therein which is equal in a size thereof to a size of each of the semiconductor devices, and having a pair of guide pins extending toward the test tray from front and rear edges thereof.

15. (PREVIOUSLY PRESENTED) The semiconductor device loading apparatus according to claim 14, wherein each of the pockets includes a pair of pin holes corresponding to the pair of guide pins such that each of the guide pins have a diameter smaller than a diameter of a corresponding one of the pin holes, and each of guide pins of respective pairs of guide pins are spaced apart from each other by a space equal to a space between a corresponding pair of pin holes.

16. (PREVIOUSLY PRESENTED) A semiconductor device loading apparatus, comprising:
a plurality of device loading units to load semiconductor devices;
a space adjusting unit;
an elevation control unit coupled to the space adjusting unit and controlling an elevation of the space adjusting unit to change a spacing between respective adjacent device loading units in accordance with the elevation of the space adjusting unit; and
a guide block fixing unit provided adjacent to the plurality of device loading units to guide the semiconductor devices therethrough to pockets of a test tray, respectively,
wherein the guide block fixing unit is remote from the device loading units and the test tray, and is provided with guide blocks of a number equal to a number of the pockets of the test tray, and
wherein each of the guide blocks comprises an open portion having an entrance portion formed on one surface of the guide block and an exit portion formed on another surface of the guide block such that the entrance portion is larger in a size thereof than a size of the exit portion and a respective semiconductor device is substantially equal in a size thereof to the size of the exit portion to allow the semiconductor device to pass therethrough.

17. (PREVIOUSLY PRESENTED) The semiconductor device loading apparatus according to claim 8, wherein the plurality of device loading units, the space adjusting unit and the elevation control unit move separately from the guide block fixing unit.

18. (PREVIOUSLY PRESENTED) A method of loading a semiconductor device with a loading apparatus for test handlers, comprising:

adjusting pitches of vacuum adsorbers by one of lifting and lowering of a space adjusting plate, wherein said space adjusting plate is provided with a plurality of differently slanted guides formed to individually adjust the pitches of the vacuum adsorbers, with said vacuum adsorbers each interacting with a respective one of the differently slanted guides;

vacuum-sucking and transferring the semiconductor devices to be tested to the plurality of vacuum adsorbers; and

guiding the vacuum-sucked and transferred semiconductor devices to be positioned in pockets of a test tray, respectively.

19. (PREVIOUSLY PRESENTED) A method of loading semiconductor device, comprising:

changing a spacing between adjacent device loading units in accordance with an elevation of a space adjusting unit, by controlling an elevation thereof, using a plurality of differently slanted guides, of the space adjusting unit, formed to individually adjust the pitches of the vacuum adsorbers, with said vacuum adsorbers each interacting with a respective one of the differently slanted guides; and

loading the semiconductor devices in accordance with the changed spacing.

20. (PREVIOUSLY PRESENTED) The method according to claim 19, wherein the loading of the semiconductor devices comprises:

passing each of the semiconductor devices through a guide block to position the semiconductor devices on a test tray.

21. (PREVIOUSLY PRESENTED) The method according to claim 19, wherein the changing of the spacing between adjacent device loading units comprises:

narrowing of the spacing, when the elevation of the space adjusting unit is increased.

22. (PREVIOUSLY PRESENTED) The method according to claim 19, wherein the changing of the spacing between adjacent device loading units comprises:

widening of the spacing, when the elevation of the space adjusting unit is decreased.

23. (PREVIOUSLY PRESENTED) A semiconductor device loading apparatus for test handlers, comprising:

a body including a plurality of pickup cylinders provided with a plurality of vacuum adsorbers to vacuum-suck and to transfer semiconductor devices to be tested, a space adjusting plate to adjust pitches of the vacuum adsorbers, and an elevation guiding unit to guide one of lifting and lowering of the space adjusting plate such that, when the space adjusting plate is lifted or lowered, the pitches of the vacuum absorbers are adjusted; and

a guide block fixing plate formed to be separate from the body to guide the semiconductor devices to be accurately positioned in pockets of a test tray, respectively,

wherein said space adjusting plate is provided with a plurality of differently slanted guides formed to individually adjust the pitches of the vacuum adsorbers, with said vacuum adsorbers each interacting with a respective one of the differently slanted guides.